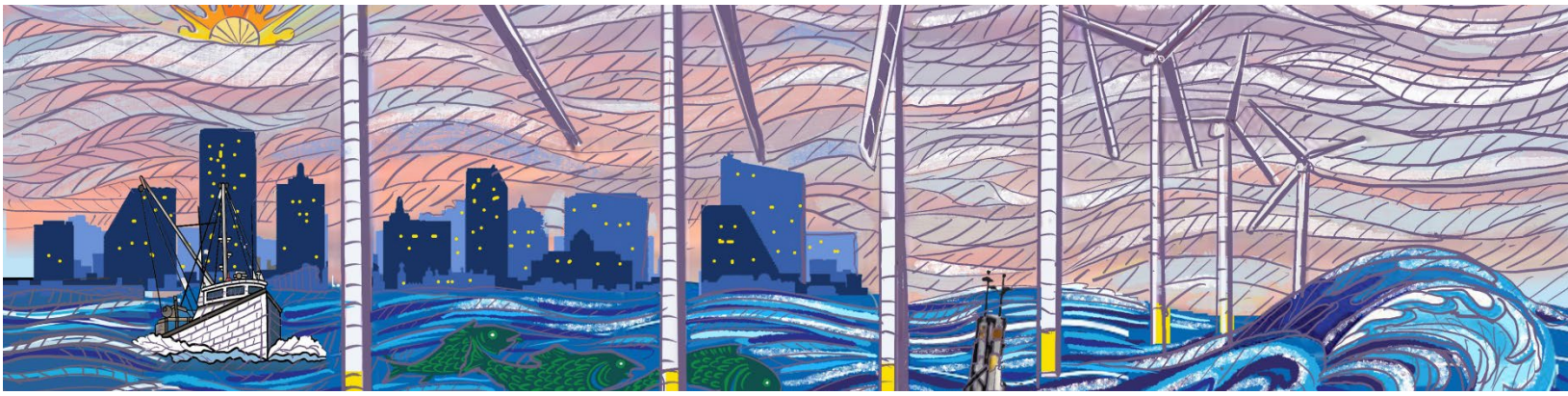

Appendix I-A

Preliminary Area of Potential Effects (PAPE) Memorandum

Note:

On March 26, 2021, Atlantic Shores Offshore Wind, LLC (Atlantic Shores) submitted a Construction and Operations Plan (COP) to BOEM for the southern portion of Lease OCS-A 0499. On June 30, 2021, the New Jersey Board of Public Utilities (NJ BPU) awarded Atlantic Shores an Offshore Renewable Energy Credit (OREC) allowance to deliver 1,509.6 megawatts (MW) of offshore renewable wind energy into the State of New Jersey. In response to this award, Atlantic Shores updated Volume 1 of the COP to divide the southern portion of Lease OCS-A 0499 into two separate and electrically distinct Projects. Project 1 will deliver renewable energy under this OREC allowance and Project 2 will be developed to support future New Jersey solicitations and power purchase agreements.

As a result of the June 30, 2021 NJ BPU OREC award, Atlantic Shores updated Volume I (Project Information) of the COP in August 2021 to reflect the two Projects. COP Volume II (Affected Environment) and applicable Appendices do not currently include this update and will be updated to reflect Projects 1 and 2 as part Atlantic Shores' December 2021 COP revision.

EDR

Memorandum

To:	Bureau of Ocean Energy Management
From:	Patrick Heaton, Dan Forrest, Andrew Roblee, Joseph Kwiatek (EDR) On behalf of Atlantic Shores Offshore Wind, LLC
Date:	September 17, 2021
Reference:	Atlantic Shores Offshore Wind Preliminary Area of Potential Effects (PAPE) to Support Review of the Project under Section 106 of the National Historic Preservation Act

Introduction

Atlantic Shores Offshore Wind, LLC (Atlantic Shores) is a 50/50 joint venture between EDF-RE Offshore Development, LLC (a wholly owned subsidiary of EDF Renewables, Inc. [EDF Renewables]) and Shell New Energies US, LLC (Shell). Atlantic Shores is proposing to develop two offshore wind energy generation projects within the southern portion of Lease Area OCS-A 0499 (the Lease Area), which is more fully described in Volume I (Project Information) of the Construction and Operations Plan (COP) for the Projects (EDR, 2021). Collectively, these two offshore wind energy generation projects are referred to herein as "the Projects".

The Bureau of Ocean Energy Management (BOEM) is the lead federal agency responsible for reviewing the Projects' potential environmental impacts. Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies (in this instance, BOEM) to consider the potential effect of their undertakings (i.e., the review and approval of the Projects) on historic properties. For the purposes of Section 106 review, historic properties are defined to include districts, buildings, structures, objects, or sites that are listed or eligible for listing in the National Register of Historic Places (NRHP) or which have been designated as National Historic Landmarks (NHLs). Specific to the Projects, potentially affected historic properties can include above ground historic properties – including Traditional Cultural Properties (TCPs), terrestrial archaeological resources, and marine archaeological resources.

Per 30 CFR Part 585 (BOEM, 2020), Sections 106 and 110 of the NHPA, as well as the National Environmental Policy Act (NEPA), an effect on a historic property occurs when an activity or action alters, directly or indirectly, any of the characteristics of the historic property that qualified it for inclusion in the NRHP. To facilitate BOEM's Section 106 review, Atlantic Shores has prepared this memorandum to describe and illustrate the Preliminary Area of Potential Effects (or PAPE) for the Projects. The PAPE includes all locations where construction or operation of the proposed Projects

has the potential to affect historic properties. The information used to define the PAPE herein is summarized from and references the Project Design Envelope (PDE) described in Volume I of the COP (EDR, 2021). According to BOEM, "A PDE approach is a permitting approach that allows a project proponent the option to submit a reasonable range of design parameters within its permit application, allows a permitting agency to then analyze the maximum impacts that could occur from the range of design parameters, and may result in the approval of a project that is constructed within that range" (BOEM 2018). The PDE approach allows Atlantic Shores design flexibility and an ability to respond to advancements in industry technologies and techniques.

Based on review of BOEM's *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585* (BOEM, 2020), Atlantic Shores has proposed the PAPE to include the following geographic areas:

- the viewshed from which renewable energy structures, whether located offshore or onshore, would be visible, constituting the viewshed portion of the PAPE; and
- the depth and breadth of terrestrial areas potentially impacted by any ground-disturbing activities, constituting the terrestrial archaeological resources portion of the PAPE; and
- the depth and breadth of the seabed potentially impacted by any bottom-disturbing activities, constituting the marine archaeological resources portion of the PAPE; and
- any temporary or permanent construction or staging areas, both onshore and offshore, which may fall into any of the above portions of the PAPE.

Effects are only assessed to historic properties within the PAPE for the Projects. This includes reasonably foreseeable effects caused by the Projects that may occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5(a)(1)). The following sections describe the PAPEs for potential visual effects, physical effects to above ground historic properties and terrestrial archaeological resources, and physical effects to marine archaeological resources.

The final Area of Potential Effects (APE) will be formally determined by BOEM as part of the Section 106 consultation process. The process for identifying and evaluating effects on historic properties resulting from the construction and operation of the Project will involve consultation with BOEM, the New Jersey Historic Preservation Office (NJHPO), Tribal Historic Preservation Officers (THPOs), and other consulting parties with a demonstrated interest in the historic properties (e.g., historic preservation organizations).

Preliminary Area of Potential Effects for Visual Effects

The Projects' potential visual effects on above ground historic properties and TCPs would be a change (resulting from the introduction of offshore or onshore facilities) in the aboveground historic property's visual setting. BOEM defines the APE for visual effects as the geographic areas from which the offshore and onshore Project components could be seen. Onshore components (e.g., onshore substations and O&M facilities) have a viewshed radius of 1 mile around the facility. The onshore interconnection cables will be located underground and therefore there is no visual PAPE associated with those facilities. Offshore components (e.g., wind turbine generators [WTGs] and offshore substations [OSSs]) have a viewshed radius of 40 miles from the Wind Turbine Area (WTA), which represents the maximum envelope within which WTGs and OSSs will be sited. The 1-mile and 40-mile radiuses represent the maximum limit of theoretical visibility for each respective Project component considering the size of the proposed facilities, earth curvature, atmospheric clarity, and human visual acuity. Where sufficient design parameters and/or specific facility locations or options are available, the PAPE for viewshed resources has been refined through GIS viewshed analysis to exclude areas with obstructed views.

Components of the proposed Projects that will be visible and therefore could have a visual effect on aboveground historic properties and TCPs include WTGs, OSSs, onshore substations, and the operations and maintenance (O&M) facility. Anticipated Project design details relevant to evaluating the Projects' visual effects, including the anticipated height and physical description of renewable energy facilities, are summarized in Table 1.

Table 1. Proposed Project Components

WTGs	Max. number of WTGs (Total: 200)			Project 1: 105-136 Project 2: 64-95	
	WTG layout			Grid layout with ENE/WSW rows and approximately N/S columns, consistent with the predominant flow of marine traffic	
	Max. rotor diameter			918.6 ft (280.0 m)	
	Max. height of WTGs			1,048.8 ft (319.7 m)	
OSSs	Max. number of OSSs (Total: 10 small OSS, 5 medium OSSs, or 4 large OSSs)			Project 1: 5 small, 2 medium, and 2 large OSSs Project 2: 5 small, 3 medium, and 2 large OSSs	
	OSS Dimensions			Small: 131 ft (40m) x 115 ft (35m) x 98 ft (30m) Medium: 213 ft (65m) x 148 ft (45m) x 115ft (35m) Large: 295 ft (90m) x 164 ft (50m) x 131 ft (40m)	
	OSS Layout			Positioned along the same ENE/WSW rows as WTGs	
	Min. distance from shore			*Small OSS:* 12 mi (19.3 km) *Medium and large OSS:* 13.5 mi (21.7 km)	
Onshore Facilities: two (one per POI)	POI	Cardiff Onshore Substation		Larrabee Onshore Substation	
	Site Alternative	Preferred Site	Alternative Site	Preferred Site	Alternative Site
	Parcel size	38.5 acres (0.156 km^2)	23.9 acres (0.097 km^2)	10.2 acres (0.041 km^2)	14.6 acres (0.059 km^2)
	Substation area:	630 ft (192m) x 921 ft (281m)			
	Max height	Tallest structures will be lightning masts not to exceed 80 feet (24.4 m)		Tallest structures will be lightning masts not to exceed 125 feet (38.1 m)	
O&M Facility	Location			New operations and maintenance (O&M) facility at a site to be determined in Atlantic City, New Jersey	
	Facility size			Anticipated to require an area not exceeding 2 acres (0.008 km^2)	
	O&M Facility height			New building with a total structure height anticipated no to exceed 60 feet (18.3m) in height	

The PAPE for aboveground historic properties and TCPs includes those areas that could have potential visibility of the WTGs, OSS, onshore substations, and O&M facilities, as determined by viewshed analysis. The viewshed analysis is based upon a highly detailed digital surface model (DSM) generated from lidar data that includes the elevations of land features, buildings, trees, and other objects large enough to be resolved by lidar technology. The visual PAPEs for the offshore and onshore components of the Projects include:

- **Offshore Facilities Visual PAPE**: In accordance with BOEM guidance (BOEM 2020), the areas from which renewable energy structures could be visible (or viewshed) was established as the Offshore Facilities PAPE. The lidar-based viewshed analysis of potential WTG and OSS visibility, or Offshore Facilities Visual PAPE, identifies those areas with potential visibility of the Projects located within 40 miles of the WTA (Figure 1). A 40-mile viewshed radius around the proposed WTG and OSS locations was established as the maximum limits of theoretical visibility for the Projects based on the maximum height of Project components, their location, curvature of the earth, atmospheric conditions, and human visual acuity. This includes a small area that is greater than 40 miles from the WTA, which was incorporated for evaluation of potential visual impact to Cape May The Offshore Facilities Visual PAPE includes approximately 288.3 square miles (746.8 sq. km) of the land areas within 40 miles of the WTA. The Projects will only be visible from approximately 12.5 percent of the onshore areas within this 40-mile area because of screening provided by topography, vegetation, buildings, and structures. Potential visibility to the WTGs and OSSs from onshore locations is largely restricted to the ocean shoreline, salt marshes and bays backing the barrier islands, inland along wetlands and waterways connecting to Great Bay and Great Egg Harbor Bay, and areas cleared for agricultural purposes or large residential lots.

- **Onshore Facilities Visual PAPE**: The Onshore Facilities Visual PAPE includes all areas within 1 mile (1.6 km) of the proposed facilities with potential visibility (based on a viewshed analysis) of the Cardiff preferred and alternative substation sites (Figures 2 and 3), Larrabee preferred and alternative substation sites (Figures 4 and 5), and O&M facility (Figure 6). Regarding the O&M facility, as described in Section 5.5 of Volume I of the COP (EDR, 2021), the Applicant is selecting a location for a proposed O&M facility. It is anticipated that this facility will be located on a parcel within the "O&M Facility PAPE for physical effects" depicted on Figure 6. The PAPE for visual effects for the O&M facility includes a 1-mile area around this envelope and it is anticipated that this will be further refined based on the location and design of the O&M facility. A 1-mile area for each of these facilities is considered the maximum limit within which aboveground historic properties could be subject to adverse visual effects given size of the proposed facilities and the screening

provided by existing topography, building/structures and/or adjacent developed areas, and vegetation. The PAPE for visual effects for each of these areas will be refined based on viewshed analysis pending further siting and design details for these facilities.

Atlantic Shores recognizes that Traditional Cultural Properties (TCPs) associated with Native American communities may be present within the PAPEs, and such properties would potentially be sensitive to visual impacts from Project construction, operations and maintenance activities, or decommissioning. Although Atlantic Shores has not identified TCPs within the Offshore Facilities Visual PAPE, we recognize that government-to-government consultations between BOEM and tribes under Section 106 of the NHPA may be necessary to identify such properties and to inform BOEM's consideration of potential visual effects to any extant TCPs.

Preliminary Area of Potential Effects for Physical Effects to Above Ground Historic Properties and Terrestrial Archaeological Resources

This section describes onshore Project components that have the potential to result in physical effects to above ground historic properties and/or require ground disturbance that has the potential to impact terrestrial archaeological resources. To support the assessment of potential physical effects to historic properties and terrestrial archaeological resources within the Onshore Project Area Atlantic Shores established a PAPE for physical effects to historic properties and terrestrial archaeological which incorporates all areas of onshore ground disturbing Project activity, or other construction activities that could result in demolition or alteration of existing buildings or other built features.

The Projects overall PAPE for physical effects consists of three distinct PAPEs associated with the Project's proposed Onshore Interconnection Cable Routes and the O&M Facility. The PAPEs for physical effects for the Cardiff and Larrabee onshore interconnection routes include the export cable landfall locations, the export cable routes, the preferred and alternative substation locations, and the points of interconnect (POI). These PAPEs are further described below based on the current PDE and are anticipated to be refined as design of the Projects progresses:

- **Cardiff Physical Effects PAPE:** The Cardiff Physical Effects PAPE includes an approximately 12-mi (19-km) 20-foot-wide (ft) (6-meter [m]) corridor within which the underground, onshore interconnection cable will be installed. This corridor will connect the 2.03-ac (0.82-ha) Atlantic Landfall Location to a 21.6-acre (ac) (8.7-hectare [ha]) preferred or 23.9-ac (9.7-ha) alternative onshore substation locations, and the Cardiff POI (Figure 7). Pending further

design, the Cardiff Physical Effects PAPE sections associated with the onshore substation facilities would be refined.

Ground disturbance at the export cable Atlantic Landfall Site will include the excavation of a Horizontal Directional Drilling (HDD) exit pit and installation of onshore transition vaults, within which the offshore export cable will be split into separate onshore cables. The transition vaults within the exit pit measure approximately 14.8 ft (4.5 m) deep with 2.0-ft (0.61-m) thick walls, resulting in a maximum vertical depth of disturbance of 16.8 ft (5.12 m) at the landfall location (Table 2).

Installation of the onshore interconnection cables will typically be accomplished via open trenching to a depth of up to 11.5 ft (3.5 m), which is the maximum vertical effect along most of the onshore interconnection cable corridor. Some specialty trenchless techniques (i.e., HDD, pipe jacking, and/or jack-and-bore) that avoid surface disturbance will be used to avoid impacts to busy roadways, wetlands, waterbodies, or existing developments or features and could result in disturbance up to 30 ft (9m) below ground surface (Table 2).

Construction activities resulting in ground disturbance at the preferred and alternative substation locations may include land and tree clearing, grading, fencing, trenching and excavation, landscaping/planting, and installation of equipment foundations. The maximum vertical effect of these activities is anticipated to be approximately 60 ft (18.3 m) in depth. The maximum horizontal and vertical effects of these activities are the Cardiff Physical Effects PAPE.

- **Larrabee Physical Effects PAPE:** The Larrabee Physical Effects PAPE includes an approximately 12-mi (19-km) 20-ft-wide (6-m) corridor within which the underground, onshore interconnection cable will be sited. The corridor extends from the 3.54-ac (1.43-ha) Monmouth Landfall Site to a 10.2-ac (4.1-ha) preferred or 14.6-ac (5.9-ha) alternative onshore substation locations, and the Larrabee POI (Figure 8). Pending further design, the Larrabee PAPE sections associated with the onshore substation facilities would be refined.

  The descriptions of ground disturbance and the maximum vertical effects for the landfall site, onshore interconnection cables, and the preferred and alternative substation locations from the Cardiff Physical Effects PAPE, above, apply to the corresponding components in the Larrabee Physical Effects PAPE. The maximum horizontal and vertical effects of these activities are the Larrabee Physical Effects PAPE.

- **O&M Facility PAPE**: Atlantic Shores is selecting a location for a proposed O&M facility. It is anticipated that this facility will be located on a parcel within the "O&M Facility PAPE for physical effects" depicted on Figure 6. Atlantic Shores plans to purchase and develop a parcel within this envelope. Anticipated construction activities that may result in ground disturbance include a new building and associated parking lot, repairs to any existing

bulkheads/docks, installation of new dock facilities, and limited marine dredging. Pending selection of an appropriate site, the proposed O&M facility is not anticipated to require an area greater than 2 acres in size. The potential depth of ground disturbance needed to construct the O&M facility will be refined as part of Project design but may extend up to 60 feet (18.3m) in depth if pilings or comparable features are required.

The onshore interconnection facilities and the O&M facility are depicted on Figures 7 and 8, tabulated in Table 2, and summarized below.

Table 2. Summary of PAPEs for Physical Effects

Project Component	Maximum Horizontal Effect	Maximum Vertical Effect
Cardiff Facilities		
Atlantic Landfall Site	2.03 acres (0.008 km^2)	16.8 ft (5.12m)
Interconnection Cable Corridor (Total Length 12-mi [19-km])	20 ft (6 m)	Open Trenching 11.5 ft (3.5 m) Specialty Installation 30 ft (9 m)
Preferred Substation	21.6 acres (0.087 km^2)'	60 ft (18.3 m)
Alternative Substation	23.9 acres (0.97 km^2)	60 ft (18.3 m)
Larrabee Facilities		
Monmouth Landfall Site	3.54 acres (0.014 km^2)	16.8 ft (5.12m)
Interconnection Cable Corridor (Total Length 12-mi [19-km])	20 ft (6 m)	Open Trenching 11.5 ft (3.5 m) Specialty Installation 30 ft (9 m)
Preferred Substation	10.2 (0.041 km^2)	60 ft (18.3 m)
Alternative Substation	14.6 (0.059 km^2)	60 ft (18.3 m)
O&M Facility	1.22 acres (0.005 km^2)	Up to 60 ft (18.3m) of vertical disturbance if pilings are similar construction methods are required. The vertical PAPE for the O&M facility will be refined pending further design details.

Marine Physical Effects PAPE

The Marine Physical Effects PAPE is defined as the combination of the approximately 102,139-acre (413.3 km^2) WTA and both proposed ECCs (including the 5,362-acre [21.7 km^2] Atlantic ECC and the 26,509-acre [95.1 km^2] Monmouth ECC) (Figure 9). Construction activities are expected to affect a small percentage of the seabed encompassed by the Marine Physical Effects PAPE, which includes the locations of the following specific facilities:

- WTG foundations: the PAPE represents the maximum disturbance associated with the PDE for WTG foundations. The PDE for WTG foundations includes piled, suction bucket, and gravity foundations, as described in Section 4.2 of COP Volume I (EDR, 2021).
- OSS foundations: the PAPE represents the maximum disturbance associated with the PDE for OSS foundations. The PDE for OSS foundations includes piled, suction bucket, and gravity foundations, as described in Section 4.4 of COP Volume I (EDR, 2021).
- Offshore cables: the PAPE represents the maximum disturbance associated with the PDE for offshore cables. The PDE includes export, inter-array, and interlink cables, as described in Section 4.5 of COP Volume I (EDR, 2021).
- Meteorological (Met) towers and buoys: the PAPE represents the maximum disturbance associated with the PDE for met towers and buoys, as described in Section 4.6 of COP Volume I (EDR, 2021).
- Vessel anchoring and jack-up vessels: As described in Section 4.10 of COP Volume I, vessel anchoring and jack-up vessels are minimally intrusive to the seabed and the depth of disturbance for these activities range from 3.3 to 16.4 ft (1 to 5 m). These activities are anticipated to occur within the rows and corridors defined for installation of the WTGs and cables (as described in Section 4.2 and 4.5, respectively, in the COP Volume I).

The Marine Physical Effects PAPE includes all areas where these activities could occur. The components of the Projects that have the potential to cause permanent or temporary disturbance to the seabed are described in Section 4.11 of Volume I of the COP (EDR, 2021) and summarized in Table 3.

Table 3. Summary of Seabed Disturbance within the Marine Physical Effects PAPE

Installation Activity	Maximum Area of Seafloor Disturbance			Maximum Depth of Potential Seafloor Disturbance
	Permanent Disturbance	Additional Temporary Disturbance	Total[a]	
WTG Foundation Installation	0.80 mi^2 (2.08 km^2)	0.55 mi^2	1.14 mi^2	262.5 ft (80m) for monopile foundations without scour protection (see Table 4.2-1 in COP Volume I).
WTG Installation and Commissioning	N/A (Included in WTG foundation footprint)	0.11 mi^2	0.11 mi^2	Depth of disturbance for jack up vessels and anchoring range from 3.3 to 16.4 ft (1 to 5 m).
OSS Foundation Installation	0.04 mi^2 (0.11 km^2)	0.05 mi^2	0.08 mi^2	229.7 ft (70m) for piled jacket foundations (see Table 4.4-2 in COP Volume I).
Export Cable Installation				The target burial depth for the export cables will be 5 to 6.6 ft (1.5 to 2 m). Cable installation is anticipated to require a trench with a maximum depth of approximately 10 ft (3 m) and a maximum width of up to approximately 3.3 ft (1 m).
Atlantic Landfall Site to OSS	0.10 mi^2 (0.26 km^2)	1.10 mi^2	1.20 mi^2 (3.11 km^2)	
Monmouth Landfall Site to OSS	0.36 mi^2 (0.93 km^2)	2.52 mi^2	2.87 mi^2 (7.44 km^2)	
Inter-Array Cable Installation (Including Cable Protection)	0.44 mi^2 (1.14 km^2)	2.92 mi^2	3.36 mi^2 (8.71 km^2)	The target burial depth of the inter-array and interlink cables will be 5 to 6.6 ft (1.5 to 2 m). Cable installation is anticipated to create a trench with a maximum depth of approximately 10 ft (3 m) and a maximum width of up to approximately 3.3 ft (1 m).
Interlink Cable Installation (Including Cable Protection)	0.03 mi2 (0.08 km2)	0.25 mi2	0.28 mi2	Installation of 37.3 mi (60.0 km) of interlink cables. The target burial depth of the inter-array and interlink cables will be 5 to 6.6 ft (1.5 to 2 m). Cable installation is anticipated to create a trench with a maximum depth of approximately 10 ft (3 m) and a maximum width of up to approximately 3.3 ft (1 m).
Met Tower Installation	N/A	N/A	N/A	There is sufficient conservatism in the total estimates of permanent and temporary seafloor disturbance from WTG foundation installation to account

Installation Activity	Maximum Area of Seafloor Disturbance			Maximum Depth of Potential Seafloor Disturbance
	Permanent Disturbance	Additional Temporary Disturbance	Total[a]	
(Including Scour Protection)				for the impacts from the met tower's installation.
Metocean Buoy Installation	N/A	0.02 mi2	0.02 mi2	The maximum area of temporary seafloor disturbance from each buoy's anchor (including anchor sweep) is anticipated to be approximately 0.005 mi^2 (0.013 km^2), with a maximum depth of disturbance of 3.3 ft (1.0 m).
Max. Total Seabed Disturbance in the WTA	1.40 mi^2 (3.62 km^2)	4.43 mi^2	5.79 mi^2	The depth of seabed disturbance for project components is variable but the maximum depths of anticipated disturbance for components is summarized in this table.
Max. Total Seabed Disturbance in the ECCs	0.38 mi^2 (0.98 km^2)	3.09 mi^2	3.29 mi^2	The depth of seabed disturbance for project components is variable but the maximum depths of anticipated disturbance for components is summarized in this table.

Note:

a) For WTG, OSS, and met tower foundations, the foundation type with the maximum footprint is not the same as the type with the maximum area of additional seabed disturbance. Thus, the sum of the maximum area of permanent disturbance and additional temporary disturbance does not equal the total seabed disturbance.

Anticipated Refinement of the PAPE

As noted previously herein, the PAPE includes all locations where construction or operation of the proposed Projects has the potential to affect historic properties. The information used to define the PAPE herein is summarized from and references the PDE described in Volume I of the COP (EDR, 2021). According to BOEM, "A PDE approach is a permitting approach that allows a project proponent the option to submit a reasonable range of design parameters within its permit application, allows a permitting agency to then analyze the maximum impacts that could occur from the range of design parameters, and may result in the approval of a project that is constructed within that range" (BOEM 2018). The PDE approach allows Atlantic Shores design flexibility and an ability to respond to advancements in industry technologies and techniques.

The final APE will be formally determined by BOEM as part of the Section 106 consultation process. The process for identifying and evaluating effects on historic properties resulting from the construction and operation of the Project will involve consultation with BOEM, the NJHPO, THPOs,

and other consulting parties with a demonstrated interest in the historic properties (e.g., historic preservation organizations).

Attachments:

Figure 1. Offshore Facilities Visual PAPE
Figure 2. Onshore Facilities Visual PAPE - Cardiff Preferred Substation
Figure 3. Onshore Facilities Visual PAPE - Cardiff Alternative Substation
Figure 4. Onshore Facilities Visual PAPE - Larrabee Preferred Substation
Figure 5. Onshore Facilities Visual PAPE - Larrabee Alternative Substation
Figure 6. O&M Facility PAPE
Figure 7. Cardiff Physical Effects PAPE
Figure 8. Larrabee Physical Effects PAPE
Figure 9. Marine Physical Effects PAPE

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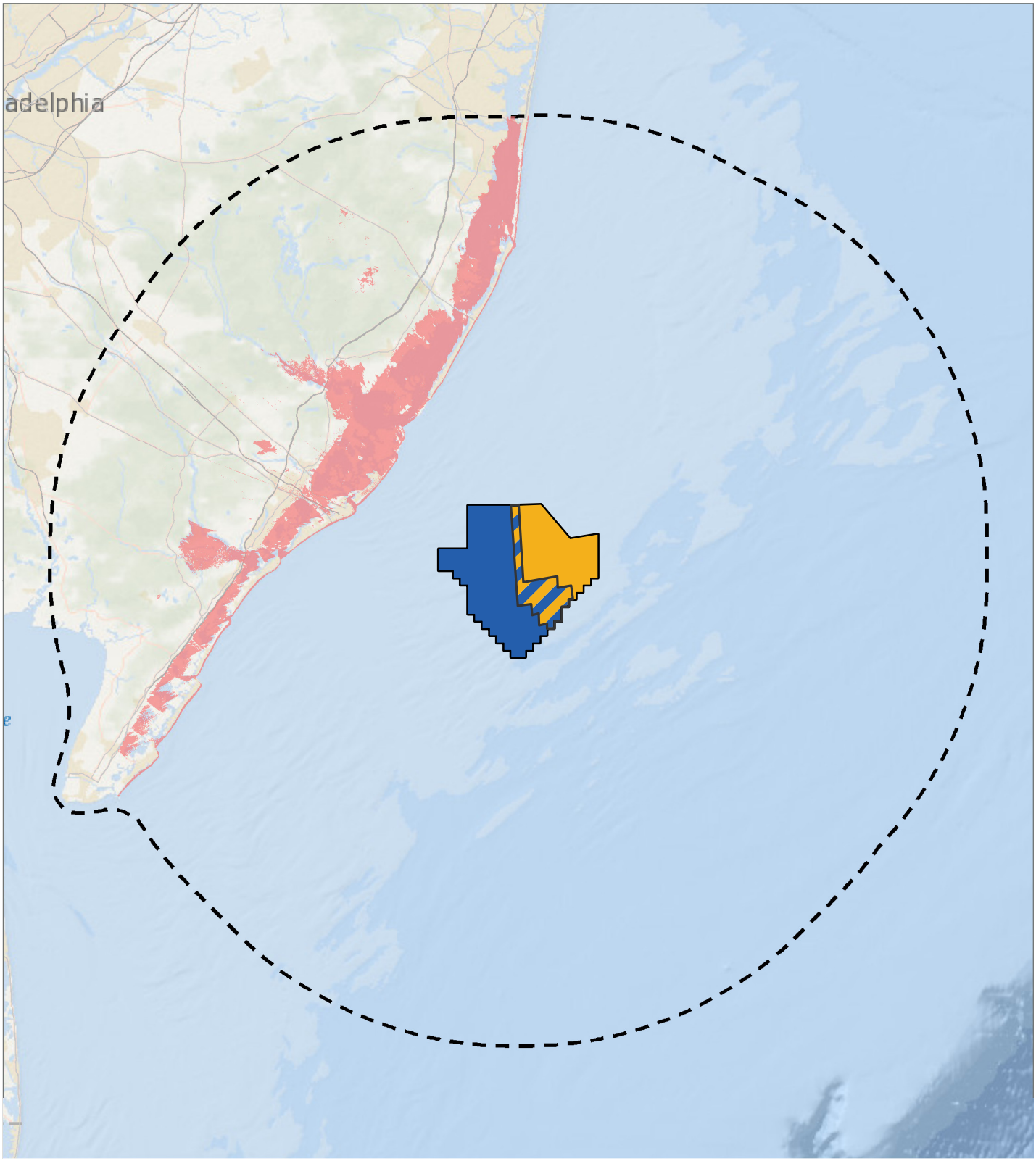
NJHPO. 2008b. Guidelines for Phase I Archaeological Investigations: Identification of Archaeological Resources.

Figure 1. Offshore Facilities Visual PAPE



Altanitc Shores Offshore Wind

Lease Area OCS-A 0499
Offshore New Jersey

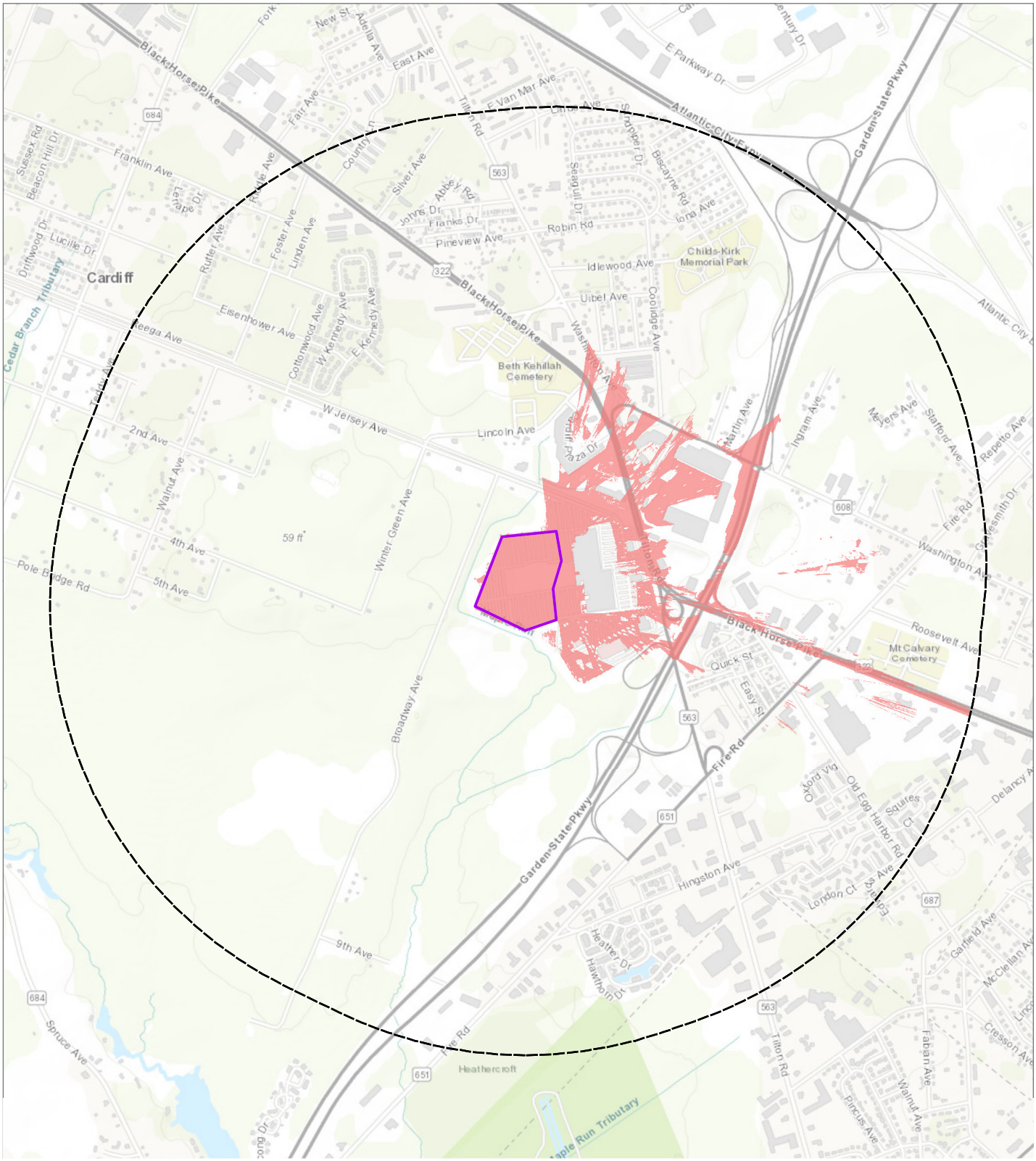
40-Mile Viewshed Radius
Project 1 Area
Project 2 Area
Overlap Area (Project 1 or 2)
Preliminary Area of Potential Effects (PAPE)
Wind Turbine Area (WTA)

0 2.5 5 10
Miles

Prepared September 17, 2021
Basemap: Esri ArcGIS Online "World Ocean Base" map service.

EDR

Figure 2. Onshore Facilities Visual PAPE - Cardiff Preferred Substation



Atlantic Shores Offshore Wind

Egg Harbor Township, Atlantic County, New Jersey

1-Mile Viewshed Radius

Proposed Substation Site

Onshore Facilities Visual PAPE - Cardiff Preferred Substation

0 500 1,000 2,000

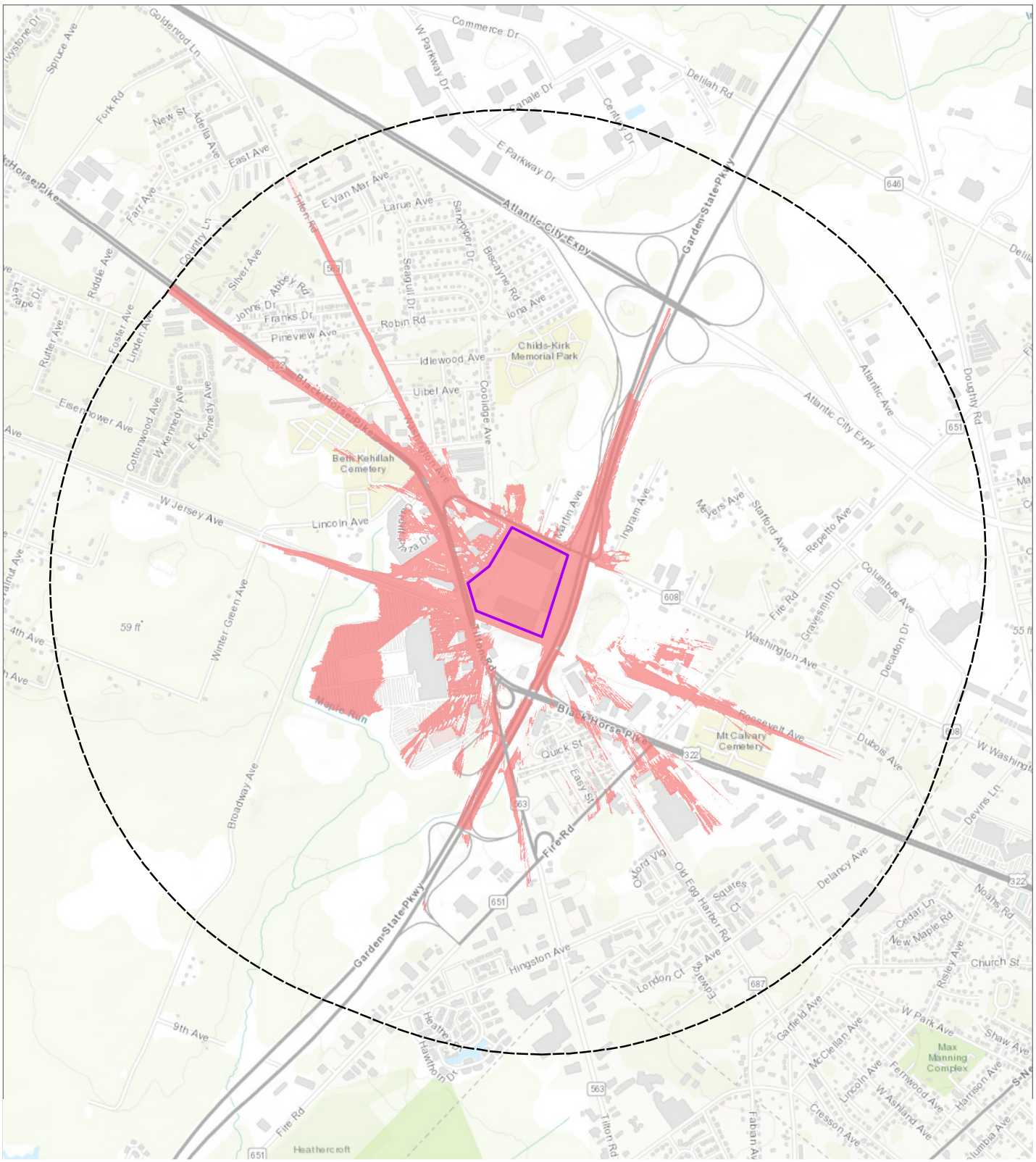
Feet

Prepared September 16, 2021

Basemap: Esri ArcGIS Online "World Topographic Map" map service.

EDR

Figure 3. Onshore Facilities Visual PAPE - Cardiff Alternative Substation



Atlantic Shores Offshore Wind

Egg Harbor Township, Atlantic County, New Jersey

1-Mile Viewshed Radius

Proposed Substation Site

Onshore Facilities Visual PAPE - Cardiff Alternative Substation

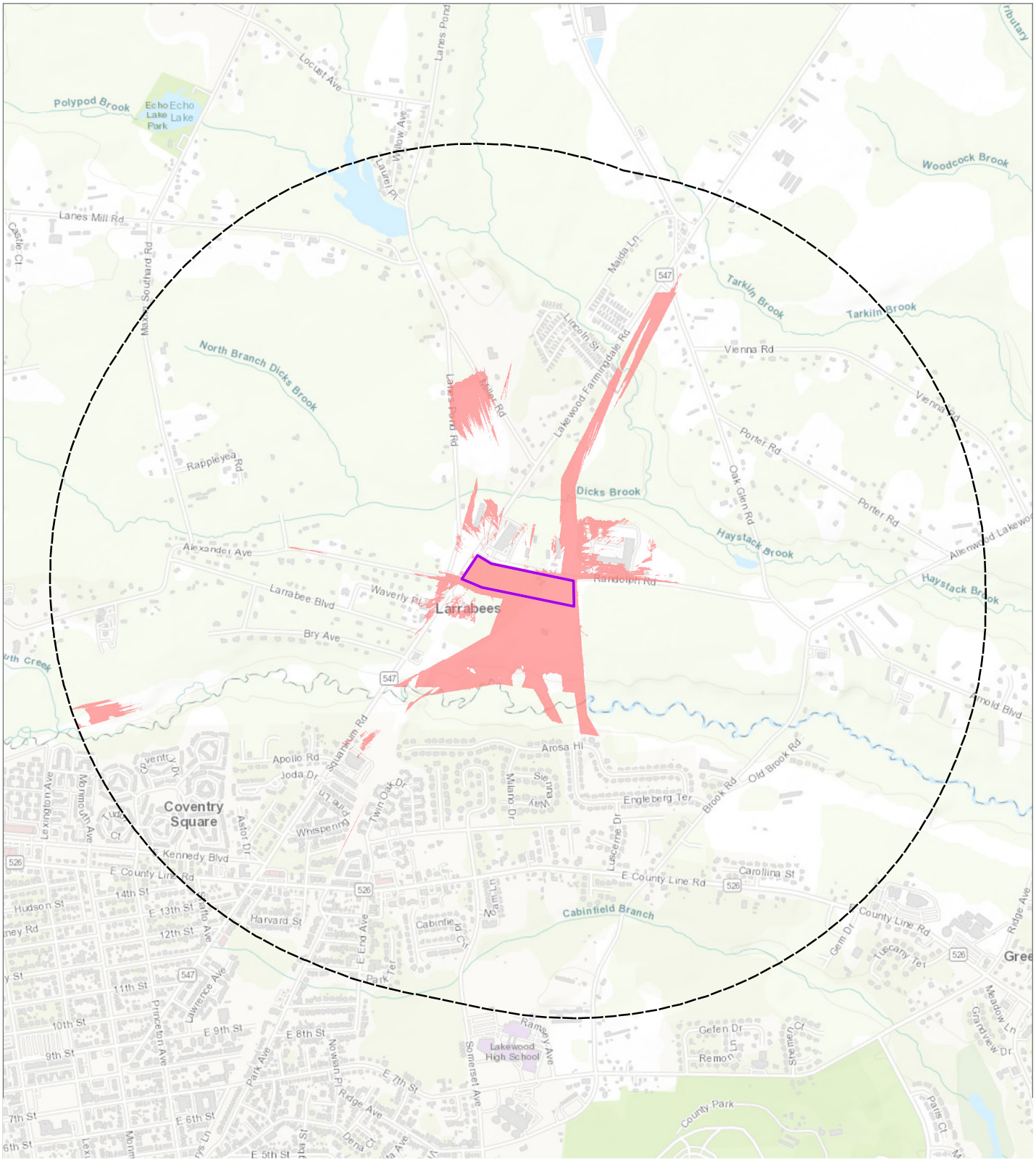
0 500 1,000 2,000

Feet

Prepared September 16, 2021

Basemap: Esri ArcGIS Online "World Topographic Map" map service.

Figure 4. Onshore Facilities Visual PAPE - Larrabee Preferred Substation



Atlantic Shores Offshore Wind

Howell Township, Atlantic County, New Jersey

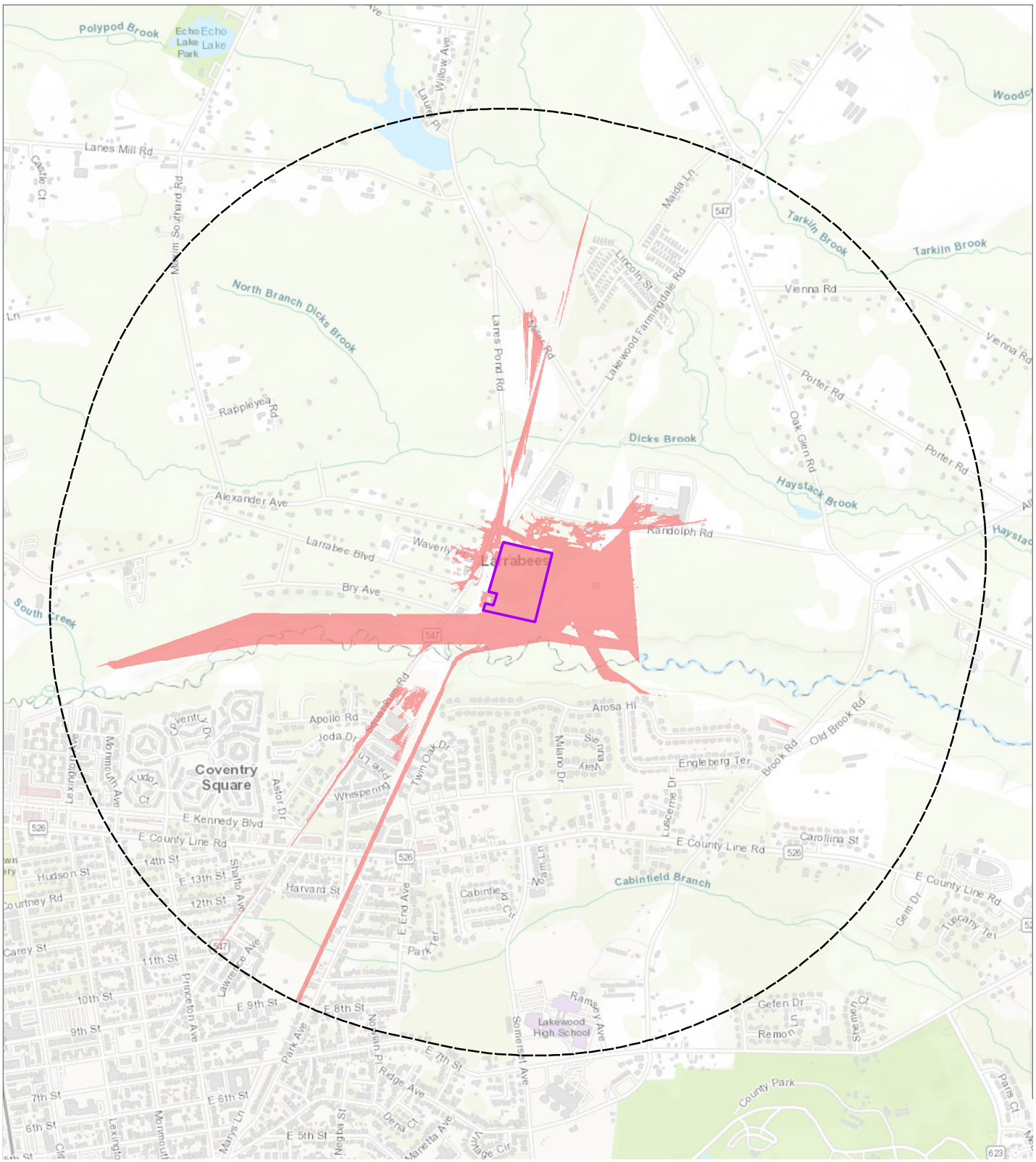
- 1-Mile Viewshed Radius
- Proposed Substation
- Onshore Facilities Visual PAPE - Larrabee Preferred Substation

0 500 1,000 2,000
Feet

Prepared September 16, 2021
Basemap: Esri ArcGIS Online "World Topographic Map" map service.

EDR

Figure 5. Onshore Facilities Visual PAPE - Larrabee Alternative Substation



Atlantic Shores Offshore Wind

Howell Township, Atlantic County, New Jersey

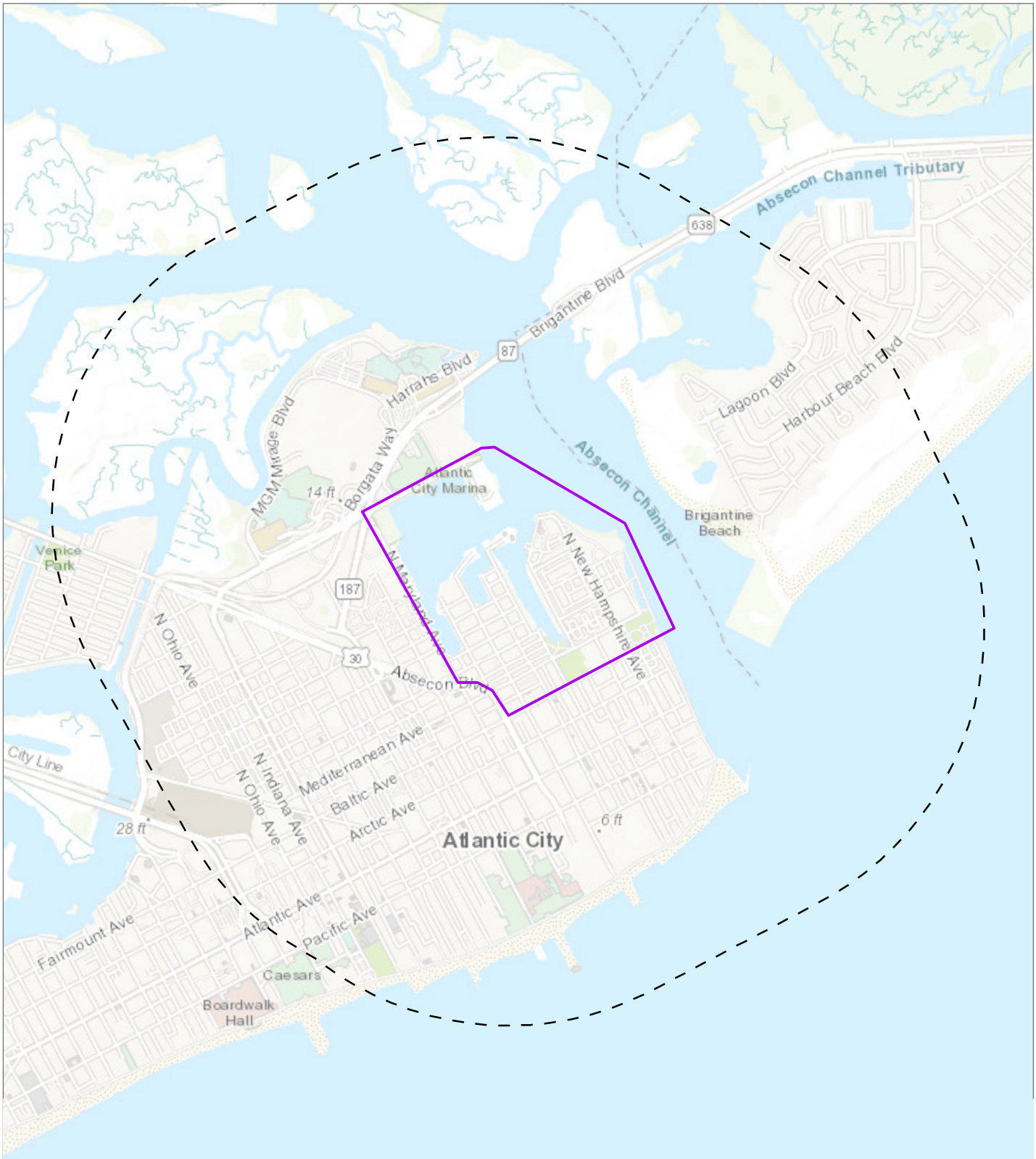
- 1-Mile Viewshed Radius
- Proposed Substation Site
- Onshore Facilities Visual PAPE - Larrabee Alternative Substation

0 500 1,000 2,000
Feet

Prepared September 16, 2021
Basemap: Esri ArcGIS Online "World Topographic Map" map service.

EDR

Figure 6. O&M Facility PAPE



Atlantic Shores Offshore Wind

Atlantic City, Atlantic County, New Jersey

O&M Facility PAPE for Physical Effects

O&M Facility PAPE for Visual effects

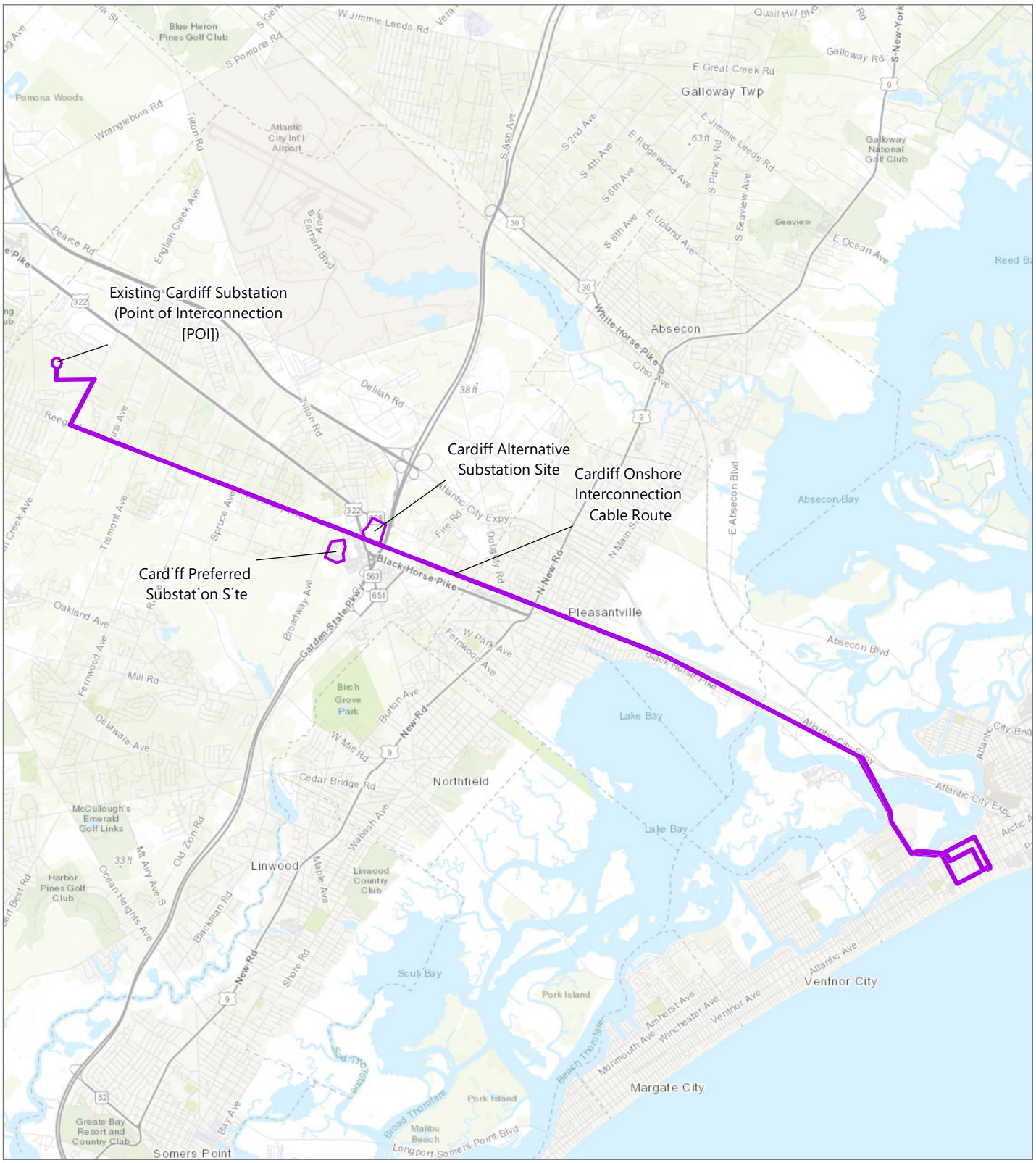
0 500 1,000 2,000

Feet

Prepared September 17, 2021

Basemap: Esri ArcGIS Online "World Topographic Map" map service.

Figure 7. Cardiff Physical Effects PAPE



Atlantic Shores Offshore Wind

Atlantic County, New Jersey

Cardiff Physical Effects PAPE

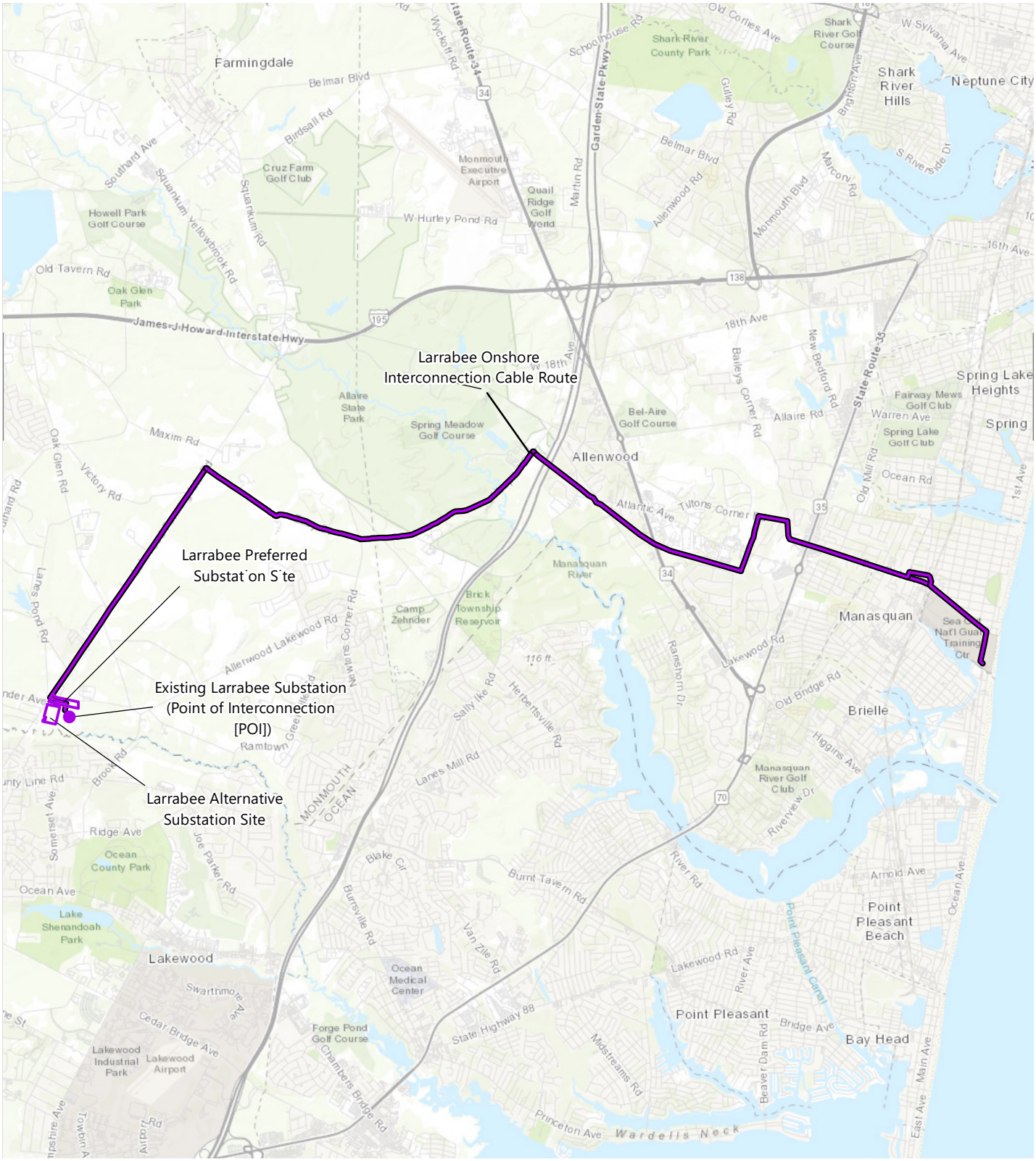
0 0.5 1 2

Miles

Prepared September 16, 2021

Basemap: Esri ArcGIS Online "World Topographic Map" map service.

Figure 8. Larrabee Physical Effects PAPE



Atlantic Shores Offshore Wind

Monmouth County, New Jersey

Larrabee Physical Effects PAPE

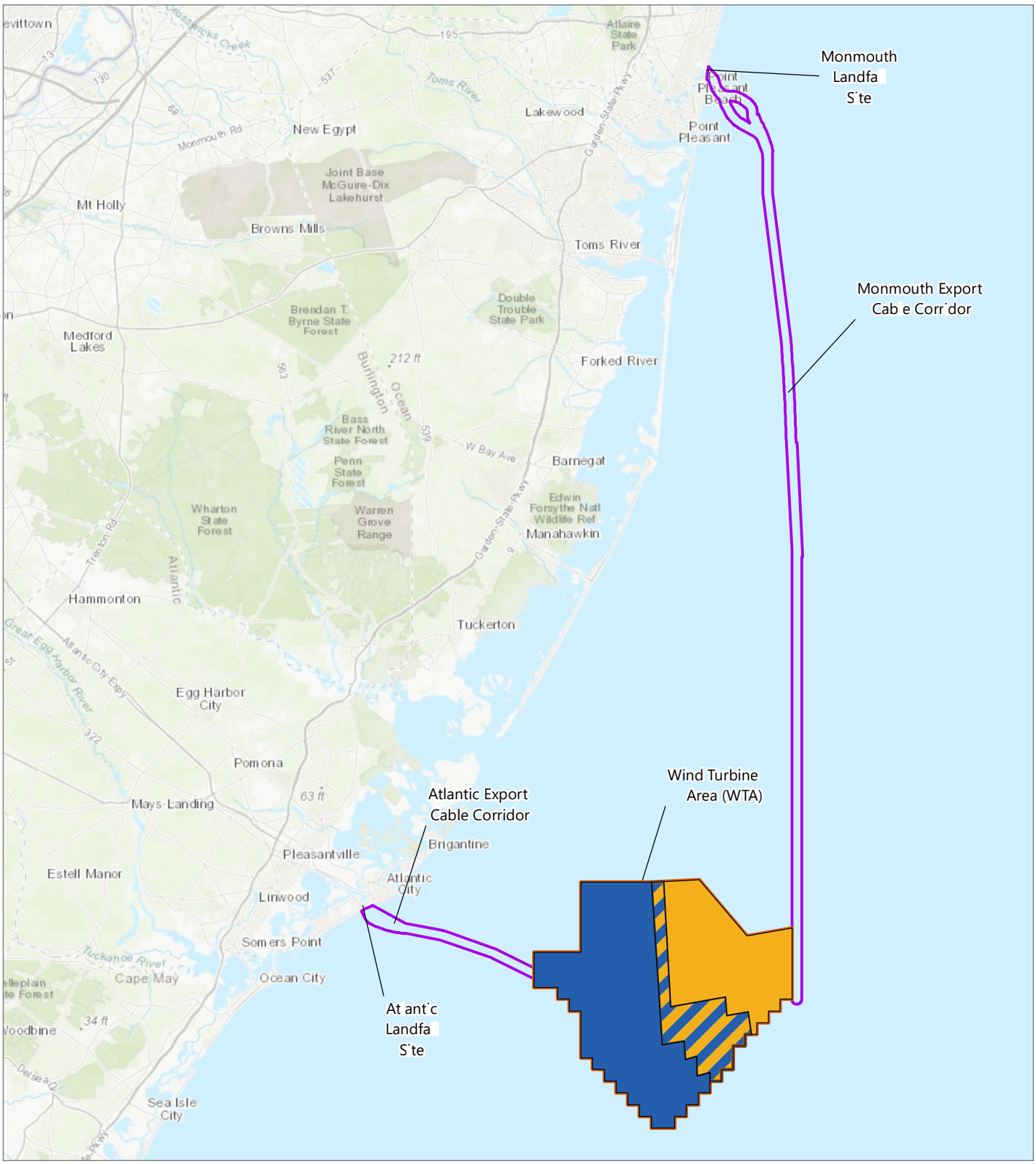
0 0.5 1 2

Miles

Prepared September 16, 2021

Basemap: Esri ArcGIS Online "World Topographic Map" map service.

Figure 9. Marine Physical Effects PAPE



Atlantic Shores Offshore Wind

Lease Area OCS-A 0499
Offshore New Jersey

- Project 1 Area
- Project 2 Area
- Overlap Area (Project 1 or 2)
- Marine Physical Effects PAPE

0 2.5 5 10
Miles

EDR

Prepared September 17, 2021
Basemap: Esri ArcGIS Online "World Topographic Map" map service.